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By- Mallinson, George G.

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The purpose of this study was to survey a representative sample of non-college bound students who were dropouts or graduates of the class of June 1963, in 12 midwestern high school. Specifically, the study was designed to investigate the socioeconomic backgrounds, the academic backgrounds, and the reactions of these non-college bound students to self, family, and school. Further, it was designed to determine the occupational areas entered by the subjects, what vocational training, if any, they had experienced, and their reactions to such training. Data collection included comparison of standardized test scores with a matched group of students who had entered college, and personal interviews. The findings of this study would indicate that high schools need to pay greater attention to the academic and counseling programs of the non-college bound students. (CH)

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CHARACTERISTICS OF NON-COLLEGE VOCATIONALLY-ORIENTED SCHOOL LEAVERS AND GRADUATES

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Final Report

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CHARACTERISTICS OF NON-COLLEGE VOCATIONALLY-ORIENTED SCHOOL LEAVERS AND GRADUATES

George G. Mallinson, Dean
School of Graduate Studies

Western Michigan University

Kalamazoo, Michigan 49001

February 1968

This research reported herein was performed pursuant to a contract with the Office of Education, U. S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

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SUMMARY

The purpose of this study was to survey a representative sample of non-college bound students who were drop-outs or graduates of the class of June 1963 in 12 midwestern high schools. The sample was selected from about 6,000 participants in a science motivation study conducted from 1957-63.

The study reported herein was designed to investigate the socio-economic backgrounds; the academic backgrounds; and the reactions of these non-college students to self, family and school. Further, it was designed to determine the occupational areas entered by the subjects; what vocational training, if any, they had experienced; and their reactions to such training.

Two primary methods were employed in obtaining the data. First, standardized test scores, obtained when the subjects were in secondary schools, were reanalyzed. The scores of these students were compared with those of a matched group of students who had entered college. Second, the subjects selected for this study were interviewed in their home communities by trained interviewers.

The findings indicated that at the early high-school level, both college and non-college bound students aspired to high level occupations. However, even in ninth grade, the non-college students did not believe they would attend college. In general, the non-college students had neutral reactions to their high-school training. They named English and business related courses as the ones that were of most value to them.

In general, the occupational and educational levels of the parents of the college-bound students were markedly higher than those of the non-college group. There was a positive relationship between these levels and the achievement of students. The higher the educational level of the parents, the higher the reading and science achievement scores of students.

The greatest dissatisfaction expressed by the subjects was with the high-school guidance program, most of them indicating that counselors had little time for, or interest in, the non-college students. Counselors failed to provide adequate vocational guidance information to these students.

About 43% of the subjects had received some type of vocational training after high school. Among the males, the most common type was an apprenticeship or a business school course. Among the females, the most common type was a nursing course or a beautician's course. Most students were satisfied with the vocational training they had received. The greatest disappointment was failure of the school to provide adequate placement service. The majority of the students interviewed were satisfied with their present job. The most common job held by males in the group was factory work. The most common jobs held by females was general office work and nursing.

The findings of this study would indicate that high schools need to pay greater attention to the academic programs and counseling programs of the non-college bound students.

CHAPTER I

INTRODUCTION

Background of the Study

In 1957 the principal investigator initiated a long-range study referred to as Science Motivation Project I that was designed to investigate the factors that were related to the achievements of students in courses in science in junior- and senior-high school; and the factors that motivate students to elect courses in science at these levels. The study was supported by the Office of Education as Project No. 503 and was officially entitled, An Analysis of the Factors Related to the Motivation and Achievement of Students in Science Courses in the Junior and Senior High Schools. The study was begun in 1957 with approximately 2,500 students completing the sixth grade in school systems representing rural, semi-urban, and urban environments in the states of Illinois, Indiana, Ohio and Michigan. These school systems included Rockford, Kankakee, and Wilmington, Illinois; Angola, Elkhart, and Kendallville, Indiana; Archbold and Bryan, Ohio; Kalamazoo, Marshall, and Quincy, Michigan; and the University High School at Western Michigan University.

The original group of 2,500 was supplemented with other students who entered the eighth grades in the various schools in the fall of 1958, as well as with those who became members of these classes during the ensuing years. The study terminated in June 1963 when the classes involved graduated from high school.

Data for Science Motivation Project I were obtained from these sources:

1. Tests administered to the students during the Project. These tests included various measures of ability, interest and aptitude, as well as of science and mathematics achievement.

2. Analyses of the subject-matter backgrounds in science and mathematics, both graduate and undergraduate, of the science teachers of these students.

3. Scores from the administration of the Personal Audit to the science teachers in the 7th, 8th and 9th grades.

4. Numerous interviews and observations within the communities of the participating school systems.

The tests that were regularly administered during the course of the project are found on the next page. In addition, special achievement tests in science were administered where appropriate. The data from all these sources were punched into IBM cards and analyses were made, using appropriate statistical techniques, to obtain answers to the questions posed in the Project. The numbers of students participating from each of these school systems are shown below:

School System	No. of Students
Angola	192
Archbold	78
Bryan	178
Elkhart	736
Kalamazoo	1,153
Kankakee	537
Kendallville	218
Marshall	279
Quincy	155
Rockford	2,207
University High	101
Wilmington	182
Total	6,016

One subjective observation made by the principal investigator during the course of Science Motivation Project I, was that far more attention was given to educational needs of the pre-college students than to those of the non-college oriented student. Yet, it is common knowledge that great concern has been expressed since the end of World War II for "education beyond the high school" for the non-college group. Reports from many professional groups, research studies, and government bulletins, far too numerous to mention here, have dealt with the knowledge explosion and the rapid obsolescence of traditional technologies. These sources indicate that both pre-service and in-service programs of vocational and technical education which were effective only a few years ago, are no longer appropriate. It is increasingly evident that,

Table 1

The Testing Program for Science Motivation Project I

Year	Intelligence Tests	Reading Tests	Interest Tests and Inventories	Achievement Tests
1957-58	SRA Primary Mental Abilities: Intermediate Form		SRA Junior Inventory: Form AH	SRA Achievement Series: Science Part I (1958) and Science Part II (1958) SRA Achievement Series: Arithmetic (Grades 6-9)
1958-59		Diagnostic Reading Test: Form A	SRA Junior Inventory: Form AH	SRA Achievement Series: Science Part I (1958) and Science Part II (1959) SRA Achievement Series: Arithmetic (Grades 6-9)
1959-60	SRA Primary Mental Abilities: Intermediate Form		Your Educational Plans	SRA Achievement Series: Science Part I (1958) and Science Part II (1959) SRA Achievement Series: Arithmetic (Grades 6-9) Nelson Biology Test
1960-61			Kuder Preference Record: Form C	Nelson Biology Test Tests for General Physical Science
1961-62	SRA Tests of Educational Ability: Grades 9-12		Kuder Preference Record: Form C	ACS-NSTA Chemistry Test (1961)
1962-63		Diagnostic Reading Test: Form A	Kuder Preference Record: Form C	Dunning Physics Test

in all areas of the occupational matrix, whether college or less-than-college education is needed, improved pre-service educational programs and continuous in-service education are essential. Those persons who are not continually upgrading their vocational, technical, or professional competencies are likely to find themselves among the ranks of the unemployed, or restricted to occupations requiring less than their optimal potential. The Economic Opportunity Act of 1964 is ample evidence of Federal concern.

Despite the urgency for developing programs of vocational and technical education at less-than-college level, there has been little research based on longitudinal data to serve as a base for such development. A search of the literature failed to reveal any substantial research designed to identify the characteristics of persons with aptitudes for vocational and technical occupations or to predict the success of persons planning to enter these occupations. Neither has there been much research extended from longitudinal data concerning the attitudes and reactions of persons toward vocational- and technical-education programs or subsequent careers in these areas.

Since longitudinal data from Science Motivation Project I were available on such a population, it seemed reasonable to exploit these data for pertinent information. Thus, it was decided to do a follow-up study on those students involved in Science Motivation Project I, who either dropped out of high school prior to graduation, or who did not enter college.

Related Information

There are numerous research studies and reports based on research studies concerning manpower needs in vocational and technical fields. Among the pertinent studies are these:

1. Employment of School Age Youth, October 1963. Advance Summary, Special Labor Force Report, Bureau of Labor Statistics, United States Department of Labor, April 1964. (unpaged)

2. Employment Projections, by Industry and Occupation, 1960-75. Special Labor Force Report, No. 28. Reprint No. 2412 from the Monthly Labor Review, March 1963.

3. Greenberg, Leon and Weinberg, Edgar, "Automation Nationwide Studies in the United States." Prepared for the

Meeting of Experts on Automation, International Labor Office, Geneva, Switzerland, March 16-25, 1964. Pp. 23+4. Available from the Bureau of Labor Statistics, U. S. Department of Labor, Washington, D. C.

4. Manpower and Automation Research Sponsored by the Office of Manpower, Automation and Training, July 1, 1962-June 30, 1963. Office of Manpower, Automation and Training, U. S. Department of Labor, Washington, D. C. 20210, August 1963. Pp. 47.

5. Manpower Report of the President and A Report on Manpower Requirements, Resources, Utilization, and Training by the United States Department of Labor. Transmitted to the Congress March 1964. Available from the Superintendent of Documents, Washington, D. C. 20402. Pp. 279.

6. On Research and Training Activities Under the Manpower Development and Training Act. Transmitted to the Congress, February 1963. Available from the Superintendent of Documents, Washington, D. C. 20402. Pp. 135.

7. Productivity, Changing Technology and Employment. A Reprint from the Manpower Report of the President, March, 1964. (See #5 above. Note: This was included in the bibliography because of its specific focus.)

8. Perella, Vera C., Employment of High School Graduates and Dropouts in 1963. Special Labor Force Report No. 41. Reprint No. 2439 from the Monthly Labor Review, May 1964.

Although the data in these references are extensive, several generalizations can be drawn. Among them are these: (1) the needs for skilled manpower in the vocational and technical occupations are far greater than the available supply; (2) currently neither facilities nor programs are available to accomplish the mission of training such manpower; and (3) "In focusing on the people involved, fundamental questions [need] to be answered . . ." Some of these specific questions are listed on p. 51 in reference number 6 above.

The Problem

As a result of the dearth of research in this area, and because of the availability of background information on a large number of students gained from Science Motivation Project I, it was decided to undertake this research on the characteristics of non-college, vocationally-oriented students. Specifically, the problem of this study was to assess certain characteristics of a selected population of post-high-school age persons who were (1) enrolled in educational programs of non-college grade; (2) engaged in gainful occupations, or (3) seeking employment.

The specific objectives of the study were to (1) analyze the data from Science Motivation Project I, now on IBM cards, using the IBM 1620 Computer System at Western Michigan University, and (2) undertake a number of depth interviews with a view toward answering the following questions:

1. Which students who participated in Science Motivation Project I, both dropouts and high school graduates, have enrolled in some form of vocational or technical education (less than college level) since leaving high school? Vocational and technical education will include programs offered in junior and community colleges and in public and private trade schools; apprenticeship programs; adult-education programs, nursing and practical arts education; and the like.

2. What are the characteristics of those persons enrolled in the programs described in (1) above?

3. What differences exist among the characteristics of the college students in Science Motivation Project II, dropouts who are enrolled in programs listed in (1), and high-school graduates enrolled in programs listed in (1). (Note: In particular, data from Science Motivation Project I concerning family background, including socio-economic status, educational and occupational aspirations, and rapport with the student will be used.)

4. How do the characteristics of the groups listed in (3) above differ from those of students who are now gainfully employed, and those who are unemployed and who did not enroll in programs listed in (1)?

5. What aspirations do persons enrolled in vocational and technical programs have for their future occupations and further education?

6. What types of occupations have students who completed vocational and technical programs entered?

7. What reactions do the students have to the training programs?

Answers to related questions that emerged as appropriate were also sought. A discussion of the methods employed in the study is found in Chapter II that follows.

CHAPTER II

METHODS EMPLOYED

Purpose

The purpose of this chapter is to describe the methods employed in (1) reevaluating the backgrounds of the subjects, as revealed in test results obtained during Science Motivation Project I; (2) selecting a representative sampling of students for personal interviews; and (3) carrying out the in-depth personal interviews.

Reanalysis of Data From Science Motivation Project I

As indicated in Chapter I, about 20 standardized tests were administered to those students who participated in Science Motivation Project I from 1957 throughout 1963. These various interest, intelligence, reading, science achievement and other tests are listed in Table 1, p.4. Since all test results were punched into IBM cards, it was relatively easy to reanalyze the data for use in this study. The analyses made will be described where appropriate with the findings and conclusions in later chapters of this report.

Preliminary Steps in Selecting a Sample

One of the first tasks in the study was to identify as many as possible of those participants in Science Motivation Project I who were currently, had been, or anticipated being, enrolled in some post-high-school vocational or technical program. Although this task posed many problems, it was eased somewhat as a result of other research activities of the principal investigator.

Upon completion of Science Motivation Project I, the principal investigator undertook another study, referred to as Science Motivation Project II. In this study, an analysis was made of academic programs and related activities of those participants in SMP I who entered college on graduation from high school. Hence, it was necessary to keep a constant check on the current addresses and activities of all SMP I students. This was accomplished through visits to the various cooperating high schools, correspondence with all known SMP I participants; and many trips to the cities involved in order to make telephone calls to the homes of participants. Thus, during the process of

"maximizing" the mailing list for SMP II, it was also possible to check on the whereabouts of potential participants in this study. Ultimately, however, the task centered mainly on a direct search for the current mailing addresses of all those participants of SMP I who did not go to college. Some of these were high-school graduates whereas others were dropouts.

Late in 1965, letters were sent to all participants in SMP I who presumably did not enter institutions of higher education. The letter was designed to inform these persons about the new project, referred to as Science Motivation Project III (SMP III), and to indicate that they would be receiving additional information. A copy of this letter appears in the Appendix on p. 42.

Meanwhile, the superintendents of the school systems participating in SMP I were contacted, both by telephone and letter, informing them of the project being undertaken with the non-college vocational group. Permission was sought for the investigator and/or research associate to search school records in an attempt to obtain a list of the current names and addresses of SMP I participants. It was anticipated that such a search would also help locate students who had entered vocational training programs. A copy of the correspondence sent to the administrators appears in the Appendix on Pp. 43-7. All the schools were quite willing to cooperate.

During early 1966, visits were made to all the high schools involved in the original SMP I study. On these visits complete checks were made of the permanent files of high-school graduates as well as dropouts of the class of 1963. Information was sought concerning the last known addresses of the students; whether or not they had graduated; whether or not they had applied for admission to a vocational school; and the names, addresses and telephone numbers of the parents.

During these trips to the various communities, copies of the most recent telephone directories were obtained. By contacting parents, it was frequently possible to trace the addresses of the ex-students. In the smaller cooperating high schools, school administrators, counselors, and other students were able to provide information of value in locating the potential participants.

After such trips, a "tracer" letter, a copy of which is found in the Appendix on Pp. 48-9 was employed in a further effort to maximize the mailing list.

Selecting the Interview Sample

After the list of current names and addresses of non-college students was made as complete as possible, a representative sampling of about 350 persons whose names were on the list was selected for depth interviews. The sampling was accomplished by means of the alphabetic matrix sampling technique described by Frankel and Wright.[1]

Prior to the scheduling of interviews in any community, a letter was sent to each potential interviewee seeking his willingness to participate in the depth interview, and to ascertain the most convenient time and place for the interview. Copies of the letter and questionnaire used for this purpose are found in the Appendix on Pp. 50-1 and 52. Only nine persons contacted refused to cooperate. From these efforts a tentative sampling of persons from each community were selected for interviews.

Scheduling the Interviews

Two days prior to the dates scheduled for interviewing, the research associate went to the community and attempted to contact each potential interviewee by telephone, to explain again the purpose of the study, and to make a specific appointment for the interview.

It should be stated here that these telephone contacts proved to be extremely useful in the total research effort. However, they also proved to be frustrating and time-consuming.

For example, in some of the smaller communities, it was almost impossible to locate a public telephone from which to make calls, or a motel from which calls could be made from a room. Obviously, it was necessary to have access to a telephone for a sustained period of time; and hopefully, one located in a quiet place with room for the research associate to record the results of the calls. In three communities the only public telephone available was an outdoor booth on a busy highway. The problems associated with such a location are obvious, but these booths were used.

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[1]Frankel, Abraham and Wright, Patricia, "The Alphabetic Matrix Sampling Technique." A paper presented at the 124th Annual Meeting of the American Statistical Association, Chicago, Illinois, December 27, 1964. Pp. 10.

In two communities, the only available public telephone was in the local police station; while in three others, it was necessary to call from a motel room, placing all calls through a central switchboard. The most convenient locations for placing calls were in motels in which a direct-dial telephone system was available. This situation existed, however, in only two of the communities. These difficulties are mentioned merely to forewarn other researchers anticipating studies involving telephone calls.

Generally one or two motel rooms were rented for the use of the interviewers. It was suggested that, whenever possible, the participants come to the motel for the interview. This arrangement proved to be the most satisfactory, since it was found that interviews in the home were accompanied with interruptions or an "audience" of other members of the family. The disadvantages to a depth interview in such situations are obvious. However, if a participant did not have transportation, or was unwilling to come to the motel, a home interview was scheduled.

It might be stated that the research team was pleasantly surprised by the fine cooperation of participants. With few exceptions all persons in the sample were willing, and frequently anxious, to be interviewed. The numbers of interviews conducted in each community, together with a discussion of the results, are found in Chapter IV.

One factor not anticipated when the study was initiated posed some problems with respect to sampling. After initial selections were made, it was found that many of those selected were in military service. The impact of the war in Vietnam was particularly evident on graduates or dropouts of the class of 1963 who did not enter college. In such cases the alphabetic matrix sampling technique was reapplied to the names remaining on the lists of potential interviewees. In this way "substitutes" were obtained. However, where the substitutes were obviously quite different from the original persons selected for interviews, it was decided not to carry out the interviews. Hence, a few less than the original 350 interviews planned were undertaken.

Conducting the Interviews

After the research associate had scheduled interviews in a community, a team of two or three trained interviewers conducted the depth interviews. The three interviewers were as follows:

I. Kenneth B. Engle, BA, Western Michigan University, 1939; MA, University of Michigan, 1942; EdD, Michigan State University, 1964 (Counselor Education). Dr. Engle, who headed the interview program, was a teacher for two years, an FBI agent for

four years, a high-school principal for four years, and now heads the Guidance and Personnel Services, School of Education, Western Michigan University. His field of research concerns self concepts of under-achievers.

II. Robert L. Betz, BA, Albion, 1953; MS, University of Illinois, 1955; PhD, Michigan State University, 1964 (Counseling and Psychology). Dr. Betz has worked in steel mills, has been a playground director, professional baseball player, a counselor in a high school, and is currently Assistant Professor of Education, Guidance and Personnel Services, Western Michigan University.

III. Robert A. Williams, BA, Western Michigan University, 1947; MA, University of Michigan, 1957 (Speech); PhD, Michigan State University, 1964 (Counselor Education). Dr. Williams taught English and Speech in high school for eight years, served as Director of Students in a California junior college for one year, and was in the Counseling Department of Grand Rapids Public Schools from 1956 through 1965, the last two years as Director of Pupil Personnel. In 1966 he became the Director of Testing and Guidance in the Oakland County Intermediate School District. In 1965-65, he was President of the Michigan Counselors Association.

The interviews were, in general, non-directive. However, an effort was made to elicit responses from the interviewees in four main categories, namely, (1) Self-concept; (2) Family Relationships; (3) Educational Experiences; and (4) Vocational Experiences. A copy of the interview guide used by the interviewers appears on Pp. 53-6 of the Appendix. A note, thanking the participant for his cooperation, was sent to each interviewee after the interview. A copy of the letter appears in the Appendix on p. 57.

CHAPTER III

FINDINGS FROM SMP I ANALYSES

Purpose

The purpose of this chapter is to summarize the findings revealed by the reanalysis of the data collected in SMP I.

Reanalysis of SMP I Data

As indicated earlier in this report, the subjects in this study had all participated in SMP I. The data obtained from the tests administered to the participants during SMP I were reanalyzed for SMP III using the IBM 1620 Computer at Western Michigan University. The first analysis was designed to determine to what extent the sample in this study differed from a "matched" group of college-bound students. To do so, the total sample for SMP III was paired with a population that participated in SMP II. The pairing was carried out by selecting twenty-two items from the original SMP I data that reflected interest and/or achievement in various sciences and intelligence. The scores on these items were then categorized into tenths of the total ranges of scores. The participants in SMP II and III were matched on the basis of tenths into which their scores fell. Using the basis of tenths for associating each pair of potential mates with a pair of points in real Euclidean space of some dimension, varying with the individuals, it was possible to consider how far apart the pairs were using the sum of the absolute values of the difference of corresponding coordinates. The objective was to obtain as many pairs as possible without sacrificing likeness. Thus it was deemed defensible to assume that each collection of pairs was alike if some pre-assigned small factor were identified whose distance did not exceed one or more than this factor times the dimension.

Using these criteria, nearly all SMP III participants found a mate when the factor was set to two. In fact 120 participants in SMP III were matched with 21 participants in SMP II, the participants in SMP II being paired with more than one participant in SMP III.

Comparisons of Socio-Economic Levels

One standardized measuring instrument used when the participants were in the ninth grade was Your Educational Plans. According to the Counselor's Manual for the instrument, "Your Educational Plans provides

a concise yet rich inventory of facts and attitudes as reported by a high school boy or girl." It is designed to elicit information that may assist in explaining gaps between a student's potential and performance and between his ability and aspiration.

The YEP deals with, among others, questions related to the student's father's occupational level; the educational level of the mother and father; the student's beliefs concerning his mother's and father's aspirations for his educational future; his perception of his academic and social standing among his peers; and his own occupational and educational aspirations and plans. It should be noted that responses to all items on the YEP reflect only the student's beliefs about the factors mentioned. However, research evidence indicates that such responses are valid measures of these socio-economic factors.

With these considerations in mind, the YEP responses of the pairs of SMP II and SMP III participants were compared. To make the comparisons, frequency tables were prepared, arranged in fifths of the total range, for the YEP responses of the pairs. These tables provided the basis for the findings listed below:

1. There was a great difference between the mean occupational levels of the fathers of the two groups. The mean for the college-bound (SMP II) students fell in the "top professional" category consisting mainly of occupations that required extensive higher education. The mean for the non-college bound (SMP III) group fell in the "lower" occupational categories, namely, those not ordinarily requiring college-level training.

2. At the ninth-grade level, there was no discernible difference between the expressed occupational aspirations of the students in the college-bound and non-college bound groups. Both groups, in general, aspired to enter occupations that required high levels of ability and education. The lack of realism in the occupational aspirations at the ninth-grade level of many of the non-college bound students was rather startling.

3. Although both groups of participants aspired at the ninth-grade level to high-level occupations (as indicated in 2 above), the two groups differed greatly in their plans for attending college. The mean for those who ultimately went to college fell in the category, "definitely to attend college." The mean for those who did not go to college fell in the category, "college questionable or unlikely." Thus, the students appeared to know at the ninth-grade level whether or not they would attend college. However, the vast discrepancy

between their occupational aspirations and their views about the education needed for the occupations was obvious. The deficiency of guidance programs in providing vocational information appears to be great, at least up to the ninth-grade level.

4. As one might expect, the high school programs planned by the students ordinarily followed the educational plans professed at the ninth-grade level. Nearly all of the college-bound students stated they were enrolled in a college-preparatory program in high school; whereas the majority of the non-college-bound students were enrolled in a general or vocational program.

5. There was a great difference between the educational levels of the parents of the two groups. With both mothers and fathers of the college-bound students, the mean fell in the category, "have had some college training." In the case of the non-college bound, the means for both parents fell between the categories, "attended high school" and "graduated from high school." It should be indicated that as a group the mothers of the non-college bound students had a slightly higher educational level than did the fathers.

6. The students' beliefs about their parents' aspirations for their future education were consistent with their professed educational plans. Among the college bound, with both the father and mother, the mean fell in the category, "thinks college is absolutely necessary for me." Among the non-college bound, the mean for both the father and mother fell in the category, "thinks college would be desirable, but not necessary."

7. The YEP also queries students about adults outside the immediate family whom they admire. In the case of the college-bound students, the "adult model" had in most cases attended college. Among the non-college bound, in most cases the "adult model" had not attended college.

It is difficult to suggest that any of these findings are inconsistent with the findings of analogous research studies. They indicate the effect of the family's educational backgrounds and aspirations on those of the children. Where there is contact with college-trained adults, the children are more likely to aspire and prepare for college. Yet, children from families without aspirations for higher education and who do not have such aspirations themselves, have occupational goals that demand far more education than that for which they plan.

Comparisons of Interest, Academic and Intellectual Levels

As stated earlier, interest, achievement and intelligence tests were administered to the participants throughout the six years of SMP I. Thus, it was possible to compare the results of these tests obtained by all the SMP II with those of the SMP III participants. Among the comparisons made were those of results the students obtained on Parts I and II of the ninth-grade Science Achievement Test; the intelligence test, the SRA Primary Mental Abilities Test, administered in grade 11; and the reading test, administered in grade 8.

Among the more salient findings are these:

1. The mean on the reading test for all the college-bound students fell in the fourth 1/5 of the total range; that of the non-college-bound group fell in the third 1/5. In other words, while the majority of the non-college-bound group were "average," the college-bound were above average in reading ability.

2. On the intelligence test administered in grade 11, the mean for the college-bound group fell within the fourth 1/5 of the total range, or slightly above average. The mean of the non-college-bound group interviewed for this study fell in the second 1/5, or below average for the total group.

3. The Kuder Preference Record, a measure of interest, was administered to all participants in SMP I on several occasions. An analysis of these results revealed that the two areas of highest interest of the interviewees were Musical and Literary in that order. The two areas in which they expressed the least interest were Social Service and Science. The other six areas measured by the Kuder Preference Record, namely, Outdoor, Mechanical, Computational, Persuasive, Artistic and Clerical, were of "average" or "high average" interest to interviewees.

A comparison between all the college-bound and non-college-bound students in this study was made with respect to interest in Scientific, Computational, Mechanical, and Clerical areas. It was found that the college-bound students expressed above average interest in the Scientific and Computational area, while the non-college-bound were well below average in Science and low average in Computational. However, with Clerical interest, the reverse was true. Whereas the college-bound students were well below average in Clerical interest; the non-college students were slightly above average.

One may conclude that mathematics and science are not attractive to the non-college bound--a finding that can be rationalized. However, the high Literary and Musical interests are less explicable.

Comparisons of Academic Achievement, I.Q., and Socio-Economic Levels

The final analysis made by reevaluating SMP I data involved comparing certain measures of intelligence and achievement with the socio-economic levels of the non-college bound SMP III participants. As with other analyses, the comparisons were based on data obtained during the testing of the SMP I population, when the interviewees were in high school.

During the ninth grade, all students in SMP I were administered a standardized general science achievement test. Part I of the test was primarily factual recall, measuring achievement in the typical facts and concepts covered in courses in junior-high-school science. Part II contained items involving thinking and reasoning that purported to evaluate students' ability to think critically and solve problems related to science.

The interviewees' responses on this test were compared with five measures of socio-economic level, as revealed by responses to Your Educational Plans. These five included: (1) the occupational level of the father; (2) the educational level attained by the father; (3) the educational level attained by the mother; (4) the student's perception of his father's educational aspiration for him; (5) the student's perception of his mother's educational aspirations for him.

All five of these socio-economic factors bore about the same relationship to the students' achievement on Parts I and Parts II of the science test. In all cases there were moderate relationships between achievement on Part I and the five factors listed above. The higher the occupational level of the student, the higher was his score on Part I; the higher the educational levels of the father and mother, the higher was the student's achievement on Part I; and the greater the aspirations of the parents for the future education of the student, the higher was his achievement on Part I. In other words, motivation from the home environment does appear to be related to factual learning.

The relationships just described were not evident with the scores obtained on Part II of the science test. Indeed, the non-college bound SMP III students as a group achieved only mediocre scores on Part II without regard for the socio-economic factor considered. Thus, it would appear that motivation from the home is not related to an earlier finding that the mean intelligence of the SMP III students is below that of the total population of SMP I participants. This supports evidence already cited in the literature that intelligence and the concomitant factors of critical thinking are influenced primarily by heredity; whereas motivation to accomplish educational objectives of lower hierarchy is influenced

primarily by environment.

The intelligence test scores obtained from the administration of the SRA Primary Mental Abilities Test in the eleventh grade were also compared with the five socio-economic factors listed above. An analysis of the data revealed only slight relationships between the factors. Students whose parents had jobs in higher occupational categories and more advanced education, had higher intelligence test scores. However, the distribution of intelligence test scores of the non-college-bound SMP III students followed the normal curve within their range.

The final comparison of this type involved the student's total score on the Diagnostic Reading Test administered during the senior year. Comparisons between scores on this test and socio-economic factors revealed high positive relationships. The higher the occupational level of the father, the higher the educational level of the father and mother; and the higher the aspirations of the father and mother for the students, the higher the total score of the interviewee on the reading test. Here again, the factor of support and motivation from the home environment is evident.

It is interesting to note that the influence of the mother with respect to these relationships seems to be even greater than that of the father. The more formal education the mother has, generally the higher is the student's reading score. Also, the higher the mother's aspirations for the future education of the student, generally the higher is his reading score. These findings corroborate those of SMP I. In summary, then, the parents' socio-economic levels do seem to influence student's achievement in the basic instructional areas; and the mother's background apparently is more influential than that of the father. This finding is consistent with findings obtained during interviews which are discussed in the next chapter.

Summary

The purpose of this chapter was to reevaluate some of the data obtained during SMP I, while the participants in this study were in high school. The reevaluation enabled the researchers to compare the non-college-bound SMP III students with a matched group of college-bound SMP II students with respect to certain socio-economic and familial characteristics.

It was found that the matched sampling of college-bound SMP II students had higher-level socio-economic backgrounds than did the non-college-bound SMP III students. At the ninth-grade level, both groups of students seemed to have their future educational goals fairly well identified. The majority of the non-college-bound students did not,

at that time, plan to attend college and were enrolled in general or vocationally-oriented high-school curricula. Conversely, the majority of the students who did go to college stated at the ninth-grade level that they would attend college and were enrolled in college-preparatory curricula.

Interestingly, however, both groups of students had extremely idealistic aspirations concerning their future occupations. The vast majority of both college-bound and non-college-bound populations referred to here aspired to occupations that required training beyond the high school. Thus, one might say that although the SMP III students had "their feet on the ground," they had "their heads in the clouds."

Here, one may conclude that two groups of students with relatively similar interests, achievement and intelligence differ greatly in intentions for higher education, but not in occupational aspirations. The members of the college-bound group seem to be influenced by a positive family interest in their future education; by family backgrounds that include broader educational experiences; and by family aspirations for their continued education. The non-college-bound group, seemingly with "equal intelligence," capabilities and interest, fails to have such motivation. The future path for higher education seems to be directed by these factors, at least for the subjects involved here.

A comparison of the intelligence scores of all SMP II students with those of SMP III indicates that the mean scores of the college-bound students were slightly above average, whereas those of the non-college-bound SMP III students were below average.

A comparison of scores obtained on reading tests at the eighth-grade level revealed that the college-bound were above average; whereas the non-college group was about average. However, the reading scores obtained on tests administered in the senior year were closely related to the socio-economic level of the non-college bound. The higher the family level, the higher the reading score.

A comparison of the interests of the college-bound group with those of the non-college bound group revealed salient differences with respect to science and mathematics. One may suggest the programs in these areas in the secondary schools may be designed for the superior student and disregard the non-college bound. This is a matter of great concern since many technicians' jobs depend on knowledges in these fields and it seems clear that these needs are not being considered.

Finally, an analysis of the scores of the interviews indicate that there was a positive relationship between the student's achievement on the factual recall section of the general science test administered in grade 9 and his family's socio-economic level. However, there was no

such relationship between socio-economic level and achievement on Part II of the science test, which measured thinking and reasoning skills. Nearly all the non-college bound scored low on this part of the test.

The data reviewed here seem to confirm the generally-accepted beliefs that college-bound students come from higher socio-economic levels than non-college bound; they achieve higher academically; they have higher I.Q.'s; and they receive stronger motivation for academic success from their families than do the non-college bound students studied here. One may suggest also that the high school may well provide a good "general education" for the college-bound, but the term "general education" is misapplied insofar as the non-college bound students are concerned.

CHAPTER IV

RESULTS OF THE PERSONAL INTERVIEWS

Purpose

The purpose of this chapter is to summarize the findings of the in-depth interviews conducted with a selected sample of the non-college bound, vocationally-oriented students who had participated in Science Motivation Project I.

Conducting the Interviews

The methods employed in conducting the in-depth interviews with the representative sampling of students in this study were outlined in Chapter II of this report. Hence, they will not be repeated here. It should be re-emphasized, however, that the interviewers experienced unusually fine cooperation in the vast majority of the interviews. Hence, the researcher has reason to believe the findings reported in the sections that follow represent honest opinions of the interviewees.

A total of 340 interviews yielding useful data were conducted. The table below indicates the number of useful interviews conducted in each community involved originally in SMP I. The numbers from each community are approximately in proportion to the total number of SMP I participants from these communities (see Page 3). Of those students interviewed, 57% were female, and 43%, male. The disparity is explained in part by the fact that a large number of males of the non-college vocationally-oriented group were in the Armed Forces (see Chapter II).

Table 2

Numbers of Interviewees in this Study

Community	Numbers of Interviewees
Angola	16
Archbold	12
Bryan	11
Elkhart	24
Kalamazoo (including University High)	88
Kankakee	25
Kendallville	23
Marshall	24
Quincy	10
Rockford	100
Wilmington	7
	340

Analyzing the Interview Data

As indicated in Chapter II, although the interviews were essentially non-directive, each of the three trained interviewers followed the same general outline in their contacts with the interviewees. Immediately upon completing each interview, the interviewer recorded his notes on tape; typed them; or wrote them in longhand. Thus, each record was made when the information was still "fresh in the mind" of the interviewer; and before the data from one participant could become confused with that of the next.

Each interview report was typed in final form by a trained secretary, who followed the outline of the interview guide that appears on page of the Appendix. When all interviews were completed, those results that could be quantified were analyzed and tallied by the Research Associate. The resulting data were then key-punched into IBM cards and analyzed using the IBM 1620 Computer System at the University. The results that follow were obtained from these analyses.

Personal Data About Participants

Table 3 that follows indicates the percentages of interviewees who were single, married, and separated or divorced.

Table 3

Marital Status of SMP III Interviewees

	Single	Married	Separated or Divorced
Males	60%	40%	-
Females	48%	50%	2%

It can be noted that half the girls in the sample were married at the time of the interview. Considering that the interviews were conducted within 2-3 years from the date of high-school graduation, the percentage is relatively high. Of the males interviewed, 40% were married at the time of interview. The somewhat smaller percentage may be explained partially by the fact that many of the male interviewees had been in the Armed Forces or expected to be imminently.

No complete data are available concerning the marital status of the SMP II college counterparts to this group. However, informal analyses of correspondence with these counterparts indicate that less than 15% of the males and less than 20% of the females were married at the time.

It is interesting to note that one of the frequently expressed "regrets" of the interviewees was early marriage. Many expressed great unhappiness, whereas others, both male and female, stated that while they were not unhappy about their marriage, they wished they had not married immediately after high school. Together these two groups represented nearly 85% of the married interviewees. Thus, the glamour of early marriage apparently wears off for a large proportion of those who make such commitments.

One major segment of the interview was concerned with the interviewee's self-concept. Questions were posed concerning his perceptions of his own strengths and weaknesses; his regrets or disappointments in life thus far; changes that had taken place in his self-concept since high school; and his aspirations for the future. Information relating to the area of self-concept was quantified on a continuum to obtain an approximation of the self-concepts of the interviewees as a group. Those who "liked what they saw in themselves" are listed as positive and those who "did not like what they saw" are listed as negative. The table that follows summarizes the results.

Table 4

Evaluation of the Self-Concepts Held by Interviewees

Approximate Rating	Percentage of Respondents
Extremely Negative	2%
Negative	23%
"Neutral"	25%
Positive	45%
Extremely Positive	5%

The table indicates that most of the interviewees have what might be termed "good" self-concepts. While many had no strong self-concepts, either positive or negative, the largest percentage of the respondents fell in the positive category. It was interesting to note that the distribution in Table 4 above was almost identical for each sex.

The greatest proportion of those with negative self-concepts indicated that they failed to identify their strengths and weaknesses in high school or from experiences elsewhere and hence were unable to direct themselves toward tangible goals. A number professed that they were not attempting to redirect themselves even if they did not like what they believed themselves to be. Many of the female interviewees in this category, both married and unmarried, stated that they "took life as it came" and enjoyed themselves as much as they could. They indicated that they were generally "concerned with today" and that they intended to worry about tomorrow when it arrived. More than 3/4 of those with negative family relationships also had negative self-concepts.

All but a few of those with extremely positive self-concepts had entered an occupation with which they were satisfied and had not been highly mobile. They also tended to be among those with higher intelligence as measured during SMP I.

Family Relationships of Participants

The data in Chapter III of this report emphasized the influence of the parents on the educational and vocational plans of these students when they were in high school. To provide additional information concerning familial influence, one portion of the interview dealt with the participant's attitudes toward, and relationships with, his parents. Questions were posed concerning the characteristics of each parent; the parents' attitudes toward the interviewee's present status; and the general "mood" of the home.

The data obtained were analyzed to ascertain the general relationships existing between the respondents and their families. Table 5 below summarizes these findings.

Table 5

Evaluation of the Family Relationships of the Interviewees

Approximate Rating	Percentage of Respondents
Extremely Negative	2%
Negative	18%
Neutral	24%
Positive	53%
Extremely Positive	3%

A perusal of the Table above indicates that most of the interviewees had positive relationships with their families. One pertinent question was, "What are some of the things you wish your parents would have done for you but didn't?" About 85% of the interviewees responded that there was nothing they would have had their parents do differently. They indicated almost complete satisfaction with the way their parents dealt with them while they were in high school. Nevertheless about 30% commented that, "I wish they had made me study harder." Another frequent comment was, "I wish they had been more strict with me and made me be home earlier at night." Less than 5% indicated dissatisfaction with parents sufficient to make them wish they had not lived at home.

Another set of items concerned the dominant parent in the life of the interviewee. Many interviewees did not indicate that one parent was more dominant than the other. However, about 65% of the males, and 61% of the females, did state either directly or indirectly that there was one dominant parent. Table 6 below indicates the percentages of male and female interviewees who indicated that one parent was dominant in his life.

Table 6

Parental Dominance

	Father Dominant	Mother Dominant	Neither or both Parents Dominant
Male Interviewees	25%	40%	35%
Female Interviewees	23%	38%	39%

Table 6 indicates the mother was thought more frequently to be the dominant parent by both male and female interviewees. This finding is related to a finding in Chapter III indicating that the mother's level of education and the mother's aspirations for the offspring's future education, as measured by the YEP inventory, were more closely related to the student' future educational plans and to his academic achievement in high school than were any other factors. There was no discernible relationship however between the type of self-concept (negative or positive) held by the interviewee and the sex of the dominant parent. Thus one may conclude on the basis of these limited data that the dominant parent whether male or female may exert a salutary or a deleterious influence on self-concept. An analysis of the characteristics of the dominance

attributed to the parent, not possible in this study, to determine how it affects self-concept, seems desirable.

Educational Backgrounds of Interviewees

Some queries made during the interviews were concerned with the interviewees' attitudes toward their high-school training. It should be recalled that the interviews were held two or three years after high-school graduation; or even longer if the interviewee had dropped out of high school. Thus, the reactions of the interviewees were tempered by their post-high-school experiences. The interviewees were questioned about high-school courses of greatest and of least value to them; assistance received from counselors; extra-curricular activities in which they participated; and their general reactions to the high-school program.

The general reactions to high-school were tallied on a five-point scale similar to those used commonly in analyzing data from interviews. These results are found in Table 7.

Table 7

Reactions to the Total High-School Experience

Approximate Rating	Percentage of Respondents
Extremely Negative	2%
Negative	12%
Neutral	58%
Positive	28%
Extremely Positive	--

Although no students rated their high-school experiences as being "extremely positive," more rated it as being "positive" than "negative." The majority of the students seemed to have a "neutral" reaction to the high-school experience.

Most of the negative reactions toward high-school came from interviewees who had attended high school in one of two communities that will not be identified here.

Among the more frequent comments made by interviewees from these schools were "Teachers are too old;" and "Teachers are only there to collect their paychecks, they don't care a thing about the students." It is interesting to note that the programs offered in these two high schools were highly college-oriented, despite the fact that relatively few of the students went to college. Among the interviewees from these schools, the course mentioned most frequently as being of "least value" was Latin. In these schools at least one year of Latin was almost a requirement for all students. One can question the limited value of Latin for non-college bound, vocationally-oriented students.

Table 8 lists the academic areas mentioned as being of most and of least value by the interviewees.

Table 8

Courses of Most and of Least Value to Interviewees

Academic Areas	Number of Interviewees naming course as being of most value	Number of Interviewees naming course as being of least value
English	120	31
Business Studies	101	9
Mathematics	79	34
Science	72	37
Industrial Arts	32	3
Social Studies	27	31
Home Economics	15	3
Foreign Language	8	26
Agriculture	7	7
Speech	6	0
Psychology	6	0
Art	5	0
Music	3	0
Cooperative Program	2	1
Family Living	2	1
Physical Education	1	5

Many students were undecided about the academic areas of most or least value to them. A common answer concerning the "least valuable" was "all courses helped in some way." Table 8 indicates that the two academic areas claimed to be of most value by the greatest number of students were English and Business Studies, the latter including typing, shorthand, and bookkeeping. The two claimed to be of least value by the greatest number of students were science and mathematics. However, this fact alone is misleading, since almost twice as many interviewees listed these two areas as being of "most value" as of "least value." The Table also indicates that foreign languages were listed as being of "least value" more frequently than they were listed as being of "most value."

Another item that evoked interesting responses concerned the interviewees' reactions to the high-school counselor. A vast number of interviewees stated that the counselor was "too busy" to give assistance with academic and/or personal problems. The reason suggested most frequently was that the counselor's case load was so great that he could not give attention to all students. This point was generally followed by the complaint that "the counselor worked only with college-bound students; he had no time for, or interest in, the non-college bound." This, or similar comments, were repeated over and over throughout the interviews. The interviewees indicated also that although the counselor usually had much information available concerning colleges, little or no information was available about vocations or vocational schools.

Table 9 that follows summarizes the interviewees' reactions to the high-school counselor.

Table 9

Interviewees Reactions to High-School Counselor

Approximate Rating	Percentage of Respondents
Extremely Negative	12%
Negative	37%
Neutral	20%
Positive	30%
Extremely Positive	1%

The Table reveals that almost one-half of the interviewees had negative or extremely negative reactions to the high-school counselor and less than one third had positive reactions. Thus, it would appear that the non-college oriented high school student is not receiving the attention he expects from the guidance staff.

Vocational Experiences of Participants

The final, and perhaps most cogent, portion of the interviews dealt with the interviewees' vocational experiences since leaving high school. Here, students were queried concerning the numbers and types of job experiences they had had since high school; types of vocational training they may have had; where they obtained information about vocational training; future occupational plans; and their degrees of satisfaction with their current jobs.

Tabulations of the responses to the interviews indicated that some students had as many as eight different jobs in the two or three years since leaving high school. However, the mean number of jobs was slightly over one.

The wide variety of jobs claimed to be held by the interviewees are listed below:

Accountant
Animal laboratory technician
Bakery worker
Bank teller
Beautician
Carpenter
Cashier
Construction worker
Dental technician
Draftsman
Electronics worker
Factory worker
Farmer
Funeral director
General office worker
Instructor in vocational school
Key punch operator
Maintenance man
Mechanic
Medical technician
Medical vocation (other than M.D. or nursing)
Model
Newspaper worker
Nurse
Photographer
Plumber
Post office employee
Printer
Receptionist
Restaurant manager
Retail sales
Secretary
Sheet metal worker
Tool and die maker
Travel agent
Waitress

Many of the females were categorized as unemployed housewives, and many of the males had been "unemployed" members of the Armed Forces. Of the vocations listed by the male interviewees, the ones listed most frequently were factory work, Armed Forces and mechanic. Among the female interviewees, the ones listed most frequently were general office work, nursing, and housewife.

The interviewees were questioned concerning their attitudes about their present positions. It was found that 82% of the respondents were satisfied with their present positions, while only 18% express dissatisfaction. However, further probing with those that were satisfied indicated that they were not particularly aware of the breadth of opportunities in other occupational areas. Generally, the opportunities in a community, with the "tight" labor market made it possible for them to obtain jobs with little difficulty. Nearly all the interviewees expressed the desire to get jobs with higher classifications and "to make more money." But few seemed to have clear ideas about how to pursue such goals. Although seldom verbalized, it could be inferred that they commonly depended on seniority to provide these opportunities. With others, it could be inferred that they expected that the better opportunity would ultimately "fall from the sky."

Among those who expressed dissatisfaction, the reasons generally were "job not interesting," "not enough money" and "can't get the kind of job I want." Yet when this latter point was pursued, few seemed to be clear on the kind of job desired, or how other opportunities could be explored.

A prime objective of this study was to ascertain the types and frequency of vocational training in high school in which the interviewees had been engaged. The Table that follows indicates the extent of post-high-school vocational training of this group.

Table 10

Vocational Training Experiences of Interviewees

Have Had Vocational Training	Have Not Had Vocational Training	Plan to Take Additional Training
43%	34%	23%

A disturbing factor elicited from the interviews was the "less than organized" manner in which students learn about vocational training programs. Apparently little information is given to non-college bound students by high school guidance counselors (see comments concerning attitudes toward counselors, pages 29 and 30). Most interviewees indicated that they learned about vocational training possibilities from one of three sources, the radio; advertisements in newspapers and/or "pulp" magazines; and friends or relatives who had enrolled in some type of vocational training program. Thus, if the high-school is to serve non-college bound, vocationally-oriented students, a drastic change is needed in the counseling program in the direction of vocational information. Currently, there is little indication that the effort in this direction is significant.

The types of vocational training programs in which the interviewees had participated are listed below:

On-the-job mechanics training
Business college
Beautician's training
Automotive mechanic's school (private)
Nursing (registered nurse)
Nursing (practical nurse)
Electronics training
IBM data processing
Drafting
"Insurance" school
Apprenticeship training (tool-and-die; bricklayer; machinist; carpenter; plumber)
X-ray Technician training
Dental technician
Upholstering school
Modeling school
Medical technician
Mortuary science
Floral design
Photography school
Art school
Correspondence courses (management and accounting)
Night school courses in business
Miscellaneous on-the-job training courses

Of the above, those in which the greatest number of male interviewees enrolled were business school, apprenticeships, and IBM data processing; among the females, nursing, beautician's training, and IBM data processing.

In general, the students who had entered vocational training were satisfied with the programs and thought they were tailored to meet specific needs of the students in the courses. The most common complaint about the vocational training programs was the failure to provide adequate placement upon completion. Obviously, with on-the-job training courses or apprenticeships, placement was not a problem. But in many programs, such as those in business colleges, and in IBM data processing, placement was claimed to be a great problem. A common statement was, "When I finished the course, they gave me a list of businesses that might need someone with my skill. But, it was up to me to apply for the job."

Table 10 indicates that approximately 23% of the interviewees planned to take some type of additional training in the future. The vast majority of these indicated a desire to enroll in institutions of higher education. However, except for very few, the interviewers doubted that these interviewees with college aspirations were college caliber students. This seems to be consistent with the rather unrealistic aspirations for an occupation requiring a high level of education, as revealed by the responses of the non-college bound on the YEP (see pages 15 and 16 of this report).

Among the other frequently-mentioned types of training mentioned by the interviewees for the future were nursing; beautician's training; medical technology; IBM data processing; and "business school."

Summary

This chapter summarizes some of the most cogent facts revealed during the in-depth interviews of a representative sampling of non-college bound students. These students were interviewed two to three years after graduating from, or dropping out of, high school. The interviews were conducted by a team of three well-trained, experienced counselor-trainers. While the in-depth interviews were non-directive in nature, they dealt with four general areas, namely, Self-Concept; Family Relationships; Educational Background and Vocational Experiences.

In general, the interviewees had "good" self-concepts; thought they had matured greatly since leaving high school; and were, in general, satisfied with, or at least were accustomed to, their lives. The most frequently expressed regret in life was failure to obtain advanced formal education and marrying soon after high school.

In general, the family relationships of the interviewees were claimed to be satisfactory. It was apparent, however, that in general the mother is considered to be the dominant parent by the interviewees. Many interviewees expressed the regret that their parents had not made them study more in high school and they wished the parents had been more strict with them in high school with respect to such factors as evening curfews.

Most of the interviewees were satisfied with the training they had received in high school. The two areas mentioned most frequently as being "helpful" in high school were business-related courses and courses in English. Those listed most frequently as "least helpful" were science and mathematics. However, science and mathematics were listed as being "most helpful" by nearly twice as many interviewees as listed them "least helpful." The most common dissatisfaction expressed about the high school was the lack of counseling. Many students indicated that the guidance counselor either was too busy to assist him, or was too concerned with the college-bound student. In several cases, some of which were checked and found to have merit, the guidance counselor was accused of an astonishing breach of ethics. The lack of information about vocational opportunities among the interviewees seems to bear out this weakness of counseling at the high-school level.

Approximately 43% of the students interviewed had had some type of vocational training after high school. The areas of training entered by the largest number of males were business school, various types of apprenticeships and IBM data processing. Among the females, the most common types of vocational training were nursing, beautician's training, and IBM data processing. Of the students interviewed, approximately 23% were planning to enroll in some type of advanced training program in the future. Perhaps unrealistically, the largest number expressed aspirations for college.

Other areas contemplated and mentioned frequently included nursing, beautician's training, business school, and IBM training.

Two of the most cogent factors related to vocational training seemed to be the lack of factual information concerning programs and the lack of adequate placement service following completion of such training programs. Little dissatisfaction was expressed concerning the programs themselves.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary and Conclusions

The purpose of this study was to conduct an in-depth survey of certain characteristics of a sampling of non-college-bound, vocationally-oriented students who had participated in a long-range investigation of motivational factors during the years 1957-63. This study sought information concerning vocational-training programs in which they had enrolled following high school; their personal, family, and educational characteristics; how they differed from matched and unmatched groups of college-bound students; and their future vocational aspirations.

The sample of 340 subjects was obtained by applying the alphabetic-matrix sampling technique to the pool of non-college-bound participants from the long-range longitudinal investigation mentioned above and which involved more than 6,000 students. The earlier investigation, known as "Science Motivation Project I," provided data while the participants were in grades 7-12. Data obtained from the administration of numerous achievement, interest and personality inventories during the original study were available for analysis and used here.

Once the subjects were selected, a group was matched with a group of their college-bound peers who had also participated in the original SMP I. The matching was based on scores from science, interest, and intelligence tests. Certain analyses and comparisons were then made of the family backgrounds, and educational and occupational aspirations of the members of the matched groups. Among the more cogent findings were these:

1. At the ninth-grade level there was little difference between the occupational aspirations of the college-bound and non-college-bound students. Members of both groups aspired to occupations demanding high levels of education. However, there was a difference between the educational aspirations of the two groups. The non-college-bound group believed that college was "questionable" or unlikely; whereas the college-bound believed they would "definitely attend college." Consistent with their educational aspirations, the non-college-bound generally had decided on enrollment in a general or vocational curriculum, whereas the college-bound students in a college-preparatory curriculum.

2. There were great differences between the occupational and educational levels of the parents of the matched college-bound and non-college bound subjects. The "average" occupational level for the fathers of the college-bound students was in the top professional bracket; whereas that for the non-college-bound was either in the white collar category, or farmer. Practically all the mothers and fathers of the college-bound group had some college experience. The average level of education of the parents of the non-college group was between the high-school graduate and below. The mean educational level of the mothers of the non-college group was slightly higher than the mean for the fathers of this group.

   Thus, for students with similar capabilities and interests at the ninth-grade level, the educational expectations are conditioned by the family.

When all members of the college-bound and non-college-bound groups were compared, these findings emerged.

1. Comparisons of intelligence scores indicated that the mean of the college-bound students was above average, whereas that of the non-college-bound students was slightly below average.

2. Comparisons of the mean reading scores indicated that the college-bound students were above average; whereas the non-college-bound were about average.

3. Interest in science and mathematics marked the college-bound group, but not the non-college-bound. Literary, musical and clerical interests were evident with the non-college-bound, but not with the college-bound.

Analyses were also made of the high-school test scores of the interviewees in this study to ascertain the relationships that might exist betwenn achievement and socio-economic level of the family. Among the more important findings were these:

1. Achievement in reading and factual recall of science information were related to the socio-economic level of the family. The higher the educational level of the parents and the higher the occupational level of the father, the higher the achievement of the student in reading and scientific knowledge.

2. Neither intelligence nor socio-economic level seemed to bear relationships to measures of critical thinking in science. The mean intelligence score of this group of non-college-bound was about average but the group as a whole did not score well on tests designed to measure critical thinking.

The subjects in this study were interviewed by a team of experienced counselor-trainers. The interviews, while non-directive, sought information about four main factors, namely, the student's self-concept; his family relationships; his educational experiences; and his vocational experiences. The major findings in these four areas were as follows:

1. Fifty-seven percent of the interviewees were female; 47% were male. Of these, 50% of the females were married, whereas 40% of the males were married.

2. Almost half (45%) of the interviewees expressed positive self-concepts; 25% expressed "neutral" self-concepts; while approximately 25% expressed negative self-concepts. The two major disappointments expressed by the group was with failure to obtain advanced education and with marrying immediately after high school.

3. In general, the familial relationships of the interviewees were claimed to be satisfactory. Over half the group (53%) expressed positive family relationships; 24% were neutral; only about 20% were negative. Most interviewees were satisfied with the ways in which their parents had dealt with them. However, they did indicate the wishes that their parents had made them study more, and also observed more stringent curfews.

4. Many of the interviewees indicated directly or indirectly that one or the other parent exerted a dominant influence. Of the male interviewees, 25% indicated that the father was dominant; and 40% indicated that the mother was dominant. Among the female interviewees, 23% named the father as dominant; and 38% named the mother. Thus, the mother was claimed to be the dominant parent by most interviewees.

5. When questioned about their general reactions to their high-school training, over half the group (58%) were neutral; 28% were positive; about 14% were negative.

6. The two high-school courses named most frequently as being of greatest value to the interviewees were English and business-related courses.

7. A significant finding that emerged from the interviews was the negative reaction of many students to the high-school counselors. Only 31% of the interviewees expressed positive reactions to the counselor; 20% were neutral; and almost half (49%) were negative or extremely negative. Many students stated the counselors were too busy to assist them, or were more interested in the college-bound students than in the vocationally-oriented students. Although outside the realm of this study, interviewees reported major breaches of ethics on the part of counselors. Some of these comments were later verified. The effort on the part of some counselors to act as psychotherapists was decried by many.

8. Approximately 43% of the interviewees had received some type of vocational training since leaving high school. There were many types of vocational training programs represented, but among the male interviewees the most common were apprenticeships; business school training; and IBM data processing. Among the females, the three most common types of training were nursing, beautician's training; and IBM data processing.

9. While a wide variety of jobs had been held by the interviewees, the mean number of different jobs held was just over one. The most common jobs held by the male interviewees were work in factories and as mechanics. Among the female interviewees the most common jobs held were general office work and nursing. Apparently the jobs held were acceptable to the interviewees, since 82% expressed satisfaction with, or were at least accustomed to, their employment.

10. Approximately 23% of the interviewees indicated that they planned to take some type of additional training in the future. However, most of these expressed aspirations for college training, even though their backgrounds would indicate that such aspirations were not realistic. Other areas of expressed interest for advanced vocational training included nursing, beautician's training, medical technology, IBM data processing and business school.

11. Although general satisfaction was expressed by the interviewees with the vocational training courses they had experienced, two common complaints were the failure of counselors to make available information concerning possible vocational courses and the failure of the vocational school to provide adequate placement service upon completion.

Recommendations

In a study as extensive as this one, recommendations must be restricted to a few that are cogent. Among the more important suggested to the Principal Investigator are the following.

1. The guidance program of the high schools represented in this study were nearly all inadequate insofar as serving the non-college-bound student is concerned. If the statements of the interviewees are correct, most of the counselors have little occupational information available and give these students short shrift. This suggests that training programs should be overhauled drastically to provide these counselors with both the desire and training to work with non-college-bound students. In addition, there is a patent need, as evidenced by the interviews, to spend more time within the training program of guidance counselors to emphasize the ethics of their positions. In retrospect many non-college-bound persons castigate the counselors for breaches of ethics.

2. At the ninth-grade level many students with equivalent capabilities and interests have committed themselves either to college or non-college preparatory programs. Their commitments are highly related to the educational backgrounds and educational aspirations of the family for the student. It would seem, without interfering with family prerogatives, that high school programs should be made more flexible so that students can shift from one curriculum to another as they mature and change decisions about their future education. Further, there is a great deal of question as to whether students should be expected to commit themselves to particular programs in the high school as early as the ninth grade.

3. From other studies, it is quite evident that interests in science and mathematics emerge when students have successful experiences in these areas. It is also well known that occupations at all levels that require different levels of education and academic ability depend

on knowledges of science and mathematics. Yet, the interests of non-college-bound students in these areas fall far below those of the college-bound. It would seem reasonable that elementary and secondary schools should review their programs in science and mathematics in order to determine ways in which the potentially non-college-bound can be motivated and interested in these areas.

4. With few exceptions the interviewees who were married within two or three years of leaving high school expressed regrets about being married so soon. Many of them indicated that their commitments to marriage restricted them greatly in further educational, occupational and recreational pursuits. With such a large percentage expressing regrets, it is obvious that social training of the adolescent falls down badly in this category. The situation needs to be attended by both home and school.

5. The courses found to be most useful were those of greatest utilitarian value, mainly, English and business. Other fields of study in the elementary and secondary schools may well review the reasons for the opinions of the interviewees and use the experience to modify their programs accordingly.

6. The need for better vocational information from all sources for the non-college-bound is staggering in its dimensions. The sources of such information, namely through private advertising media, can be suspect. A thorough analysis needs to be made concerning why "pulp" magazines are significant sources of such information and high schools are not.

Appendix

WESTERN MICHIGAN UNIVERSITY

SCHOOL OF GRADUATE STUDIES
SCIENCE MOTIVATION PROJECT II

KALAMAZOO, MICHIGAN
49001

Dear Colleague:

In 1957, with support from the Cooperative Research Branch, U. S. Office of Education, the School of Graduate Studies, Western Michigan University, began a study to investigate certain factors related to the interest, motivation and achievement of students in science and mathematics. The study involved more than 6,000 students in thirteen school systems in the states of Michigan, Indiana, Illinois and Ohio. These students were studied from the time they entered the seventh grade through the period of the high-school program ending the spring of 1963. The study was known as Science Motivation Project I. You were one of the students who participated in that first study. For that we again extend our sincere appreciation.

At the end of Science Motivation Project I it was suggested that the progress of those students who entered institutions of higher education should be traced in the hopes of finding relationships between the data that had been collected previously and their accomplishments in college. This study, known as Science Motivation Project II, received support as Project No. 1941 from the Cooperative Research Branch, and is now in its third year.

In 1965 these efforts have entered a new phase. With support from the Technical and Vocational Education Act of 1963, the School of Graduate Studies was asked to extend Science Motivation Projects I and II with those students who did not intend to enter college or who had not yet done so. Our records indicate that you are currently a member of this group. We are therefore writing you in the hope that you may be interested in participating in this new study. We wish to make clear at this time that we are not asking you to participate. Certainly you will need to be provided with additional information to make a decision. Hence we are enclosing a postcard showing the last address listed for you and hope that you will be willing to return the postcard with the appropriate information, so that we can contact you further.

Again, I want to express my sincere appreciation to you for Western Michigan University and for the Vocational and Technical Division of the U. S. Office of Education for your valuable assistance. May I say that your cooperation is greatly needed and sincerely appreciated.

Sincerely,

George G. Mallinson
Dean and Director
Science Motivation Projects I and II

GGM:pfm
Enclosure

WESTERN MICHIGAN UNIVERSITY
SCHOOL OF GRADUATE STUDIES
KALAMAZOO, MICHIGAN
49001

January 14, 1965

Mr. F. K. McCutchan, Principal
Angola Public Schools
Angola, Indiana

(Sent to every school administrator in the Project.)

Dear Mr. McCutchan:

As you no doubt know the Final Report of Science Motivation Project I in which your school participated during 1957-63 has obtained much publicity during the past year and is likely to obtain more. At least three journals are now in the process of publishing summaries, in some cases quite extensive, of the findings. We are also receiving fine cooperation from the students who are now in college, as well as from many of those who are not, in our work on Science Motivation Project II. We are sure that this help is due in a large measure to your assistance.

A few weeks ago I was contacted by the program director of NDEA Title VI who is responsible for studies in Vocational and Technical Education. I was informed that there is a vast store of data in our files that would be extremely useful as background information for implementing this new Act. It was suggested that I submit a proposal to fund the computer analysis of this information as well as a number of interviews with ex-participants who are not now in college. As a result, I am writing this letter.

It will be necessary for us, if we implement this proposed study, to locate as many students as possible who were in Science Motivation Project I and who are not now in college. We do, of course, have addresses for many of them. Difficulties will be involved particularly in locating addresses of those who dropped out of school or who may have moved from the community. Thus, it would be extremely helpful if we might obtain some access to old records of these students for information to begin our search.

I realize that this is again imposing upon your good will. However, we would not expect you to use your secretarial services nor to contribute supplies for getting this information. Presumably we could use our secretaries to search records that might be

made available. I will be contacting you by telephone if I receive a positive statement from you about the possibility of having a conference with you to see what might be done.

I am enclosing two copies of this letter in case you may wish to direct it to some other person who may be more closely allied with such an endeavor than you are. I am also enclosing a form on which you may indicate your interest in discussing the matter.

Let me thank you sincerely for all your efforts.

Very truly yours,

George G. Mallinson, Dean

GGM/mf
Enclosures

WESTERN MICHIGAN UNIVERSITY
SCHOOL OF GRADUATE STUDIES
KALAMAZOO, MICHIGAN
49001

November 5, 1965

Mr. John F. Hommel, Principal
Angola High School
Angola, Indiana

Dear Mr. Hommel:

On January 14, 1965, you received a letter from this office concerning the interest of the U. S. Office of Education in evaluating the data we had accumulated in Science Motivation Project I for its implications for the Vocational and Technical Education Act of 1963. We were aware that we had much data in our files on students who had either graduated from your school system or who had left prior to graduation and who had participated in Science Motivation Project I, and who were not, for one reason or another, in college. It was suggested that analyses of the data for these students might be extremely useful as bases for further studies related to the Vocational and Technical Education Act of 1963. Copies of that earlier correspondence are enclosed for your information.

As I indicated in the earlier correspondence, Science Motivation Project II involving the college students is moving along well. In SMP II, we have kept contact with students from Science Motivation Project I who are not in college and have made further evaluations of their experiences in college and have attempted to relate those experiences to the data we accumulated in SMP I. Cooperation has been excellent. Data are now being analyzed for the first two years of their participation, and the results will be sent to you for your use when they are available.

In the new study which we are terming Science Motivation Project III we are dealing with a different group of students. An effort is being made to identify any post-school education that the non-college students have had, without regard for whether they graduated from high school, or dropped out before graduation. The proposal that was submitted and approved by the Human Resources Branch, Bureau of Research, U. S. Office of Education, is enclosed for your information. The delay in initiating activity resulted from the reorganization of the Office of Education.

As indicated in the earlier letter, our interest at this time is to obtain mailing lists as complete as possible for all the students that participated in Science Motivation Project I. We hope to complete

these mailing lists, first by referring to data from Science Motivation Project I, and then perusing telephone directories from the various communities. Finally, we are planning to visit the various schools, and with the permission of the administrators examine the latest records they have on the students for addresses. From these and tracer letters we hope to locate the students. In several of the school systems where we made pilot studies, the tracing of students proved to be far more successful than expected.

We discussed the possibility of using your records early this year and received your assent. However, the funds were not approved in the Spring as had been expected, but rather were approved in one of the recent education bills. Hence, we were forced, unfortunately, to delay the project. I want to make clear that we have no intention whatsoever of pressing our interest on any of the students in the Project. We are hoping, however, to obtain mailing lists so that a random sampling of these students can be interviewed to obtain information about any advanced vocational or technical education of less than college grade that they have had. As I indicated in a phone call, I am hoping to be seeing you in the very near future at our mutual conveniences to discuss the Project further.

We want to emphasize that we are not expecting your school system to contribute any services whatsoever in clerical time or materials. Any costs that may be involved will be fully reimbursed immediately. However, at the moment we cannot anticipate what these might be. Miss Paula McGraw, Secretary to the School of Graduate Studies, will serve as a full-time secretary on this Project and will act as liaison with you as the need arises. I am enclosing a postcard on which you may indicate the person we should contact in your school when we plan to visit.

Again I want to thank you sincerely for all of your contributions so far. Rest assured that the data we collect will be analyzed and turned over to you for any purpose that may be appropriate.

Sincerely,

George G. Mallinson
Dean and Director
Science Motivation Project III

GGM/mf
Enclosures

Please return in the enclosed
envelope to:
Dr. George G. Mallinson, Dean
School of Graduate Studies
Western Michigan University
Kalamazoo, Michigan

1. School system: _____

2. We shall be willing to discuss the possibility of participating in the Vocational Project: Yes _ _____ No _____

3. The person with whom contact should be established is:

_____

_____

_____

Signed: _____

WESTERN MICHIGAN UNIVERSITY

SCHOOL OF GRADUATE STUDIES
SCIENCE MOTIVATION PROJECT II

KALAMAZOO, MICHIGAN
49001

February 15, 1965

I have a rather unusual request with which you may provide me assistance. Beginning in May 1957, with support of the Cooperative Research Branch, Office of Education, United States Government, I have been conducting a study in which the progress of several thousand high school students has been traced. The study began with the testing of these students when they were in the seventh grade and continued through the graduation date from high school in June of 1963. That study was called Science Motivation Project I.

I have now been asked to find out what has become of these students. Some have gone to college; others have gone to trade schools; and many have jobs or are in military service. We are interested in learning about their progress without regard for their graduation from high school or present activity.

As you might guess, it is a difficult task to find the present addresses of all these students. We have located most of them, but some are still "unknown". Hence, we are writing to you for assistance.

Your community of is one that was involved in our original study. Included in the group was a student with the same last name as yours. All these students would now be between the ages of about 17-21. Since your name and address appear in the telephone directory for , it is possible that you may be related to, or know, the person whose name is listed below. If so, and if you know the present address of the student, we would very much appreciate receiving it. You may reply on the enclosed stamped postcard.

We know there are many groups that use letters such as these for sales or advertising purposes. This, of course, is not the case here. Consequently, we shall be more than pleased to provide you any information about the support of this study by the U.S. Government.

Any assistance you may provide will be sincerely appreciated.

Very truly yours,

George G. Mallinson, Dean
School of Graduate Studies
and
Director, SMP I and II

GGM/mf

Enclosure

WESTERN MICHIGAN UNIVERSITY

SCHOOL OF GRADUATE STUDIES
SCIENCE MOTIVATION PROJECT II

KALAMAZOO, MICHIGAN
49001

Dear Colleague:

You may recall that we wrote you a short time ago concerning Science Motivation Project III, a research study supported by the Technical and Vocational Education Act of 1963, now underway at Western Michigan University. At that time we indicated that we would be contacting you to explain more about the Project and the possibility of your participation.

The purpose of Science Motivation Project III is to study the characteristics of post-high-school age persons who are enrolled in educational programs of non-college grade, engaged in gainful occupations, or seeking employment. We were asked to undertake this study as a sequel to Science Motivation Project I, which involved secondary-school students, and in which you were a participant; and to Science Motivation Project II, which is now in progress and which concerns your colleagues who have entered institutions of higher education.

As part of the investigation, we intend to interview in depth a sampling of the participants in both Science Motivation Project II and Science Motivation Project III. The interviews will consist of questions concerning the individual's activities since leaving school and his future plans. The interviews will be conducted by the following persons:

1. Dr. Kenneth B. Engle, Director, Guidance and Personnel Services, Western Michigan University.

2. Dr. Robert L. Betz, Assistant Professor in Education, Counseling and Guidance, Western Michigan University.

3. Dr. Robert A. Williams, Director of Testing and Counseling, Oakland Schools, Pontiac, Michigan.

4. Dr. George G. Mallinson, Dean, School of Graduate Studies and Director, Science Motivation Projects I, II, and III.

We are now making plans for the interviewing in your community. As you did not express unwillingness to participate in the Project when we wrote you earlier, we sincerely hope you will be willing to be interviewed. May I say that all information obtained in this way will be kept strictly confidential and will not be disseminated outside of my office, except in statistical form after the data has been processed on IBM.

I am enclosing a sheet on which you may indicate your willingness to participate in Science Motivation Project III, and the day and time that will be most convenient for you. We do hope to schedule as many interviews as possible during the day. However, we will certainly be willing to adjust our schedule to yours, as we realize that most people work during the day. We can and will schedule interviews during the evening.

We certainly appreciate your cooperation in this matter. You will be hearing from us again shortly about the details.

Sincerely,

George G. Mallinson

George G. Mallinson
Dean and Director
Science Motivation Projects

GGM:pfm
Enclosures: interview form
return envelope

Please return this form as soon as possible in the attached envelope to:

Dr. George G. Mallinson, Dean
School of Graduate Studies
Western Michigan University
Kalamazoo, Michigan 49001

SCIENCE MOTIVATION PROJECT III INTERVIEWS

1. I am willing to participate in Science Motivation Project III and to be interviewed sometime in the near future.

   Yes _____ No _____

2. Please check the day(s) of the week which would be most convenient for you.

   a. Monday _____
   b. Tuesday _____
   c. Wednesday _____
   d. Thursday _____
   e. Friday _____
   f. Saturday _____

3. Please indicate which time(s) of day would be most convenient for you.

   a. Morning _____
   b. Afternoon _____
   c. Evening _____
   d. Other _____

4. Comments:

_____

_____

_____

(Signed) _____

_____

_____

PROJECT NO. OE-6-85-071
CHARACTERISTICS OF NON-COLLEGE VOCATIONALLY-ORIENTED
SCHOOL LEAVERS AND GRADUATES

Outline Used As Guide
During Interviews

Dr. George G. Mallinson
Principal Investigator

The program of interviews for Project No. OE-6-85-071 will be generally non-directive. The responses made by the participants, however, will be classified under four major areas, namely, (1) Self-Concept; (2) Family Relationships; (3) Educational Experiences; and (4) Vocational Experiences. The information sought is consistent with the implementation of the aims of the grant.

1. Self-Concept:

In this study, a person's self concept is considered to be the perceptions he has of his behaviors and actions. Efforts will be made to prepare verbal descriptions of the individual insofar as he views his future, and which may be "quantified" for machine analysis. If the interview were directive, questions to which information would be sought are these:

a. What do you see as your major areas of strength?

b. What do you see as your major weaknesses?

c. What differences do you see in yourself from five years ago?

d. What do you believe caused these changes?

e. If you could do anything you wanted to do, what would you do?

f. How do you ordinarily occupy yourself in your leisure time?

g. With what kinds of people do you like to spend your spare time?

h. What is your major disappointment to date?

(Note: While these questions are designed to define and establish perimeters for the interview, the skill of the interviewers will determine how successful the technique will be.)

2. Family Relationships:

Family relationships are important to the individual's current behaviors. In general, theories of vocational development place much emphasis on family relationships on vocational decision-making. Thus, an effort will be made to obtain the individual's views of his family relationships and his place in the family.

The questions would be these:

a. What are your father's most outstanding characteristics?

b. What are your mother's most outstanding characteristics?

c. In general, what are your major contributions to your family?

d. What are your brothers and sisters like?

e. How does your family react when you discuss your plans and ideas with them?

f. What is it like around your house?

g. What were some of the major problems of your growing up years?

h. What would your family like you to do with your life?

i. What are some of the things you wish your parents would have done for you but didn't?

3. Educational Experiences:

The educational experiences and plans of the student beyond his elementary and secondary school experiences will be related to the information about self-concept and family relationships of the students.

a. What has been the greatest influence for you to take education beyond the high school?

b. How far beyond your education in the elementary and secondary schools do you intend to go?

c. Who were some of the people who helped you make decisions about your "advanced education?"

d. What are some of the subjects that have helped you most since you went to school?

e. What are some of the subjects that have helped you least?

f. If you take more education, what are you likely to study?

g. Suppose you cannot enter the occupation of your choice. What are some other occupations that might be satisfactory?

h. How do your present educational plans fit your long-term desires for an occupation?

4. Vocational Experiences:

These questions will attempt to determine the individual's reactions to any programs of vocational and technical education in which he has been enrolled and his views about further enrollment.

a. What kinds of job training have you received since you left the elementary and secondary schools?

b. Who offered the vocational and/or technical education and where did you take it?

c. In what ways did your training fit you for the job for which you were training?

d. In what ways was the training inappropriate for the job for which you were training?

e. In what ways has the training helped you in your advancement in your occupation?

f. Which parts of the training were most useful? Which were least useful?

g. Did you successfully complete any training programs in which you were enrolled? If so, which ones?

h. Did you drop out of any of the training programs prior to completion? If so, which ones and why?

i. What efforts were made by instructors in any of these programs to fit the programs to your background?

j. Do you intend to go into any other training program?

k. Have your plans for a future occupation been changed by any training programs in which you have been enrolled?

WESTERN MICHIGAN UNIVERSITY
SCHOOL OF GRADUATE STUDIES
KALAMAZOO, MICHIGAN
49001

I want to express my sincere appreciation to you for the time you devoted recently to the interviews as part of Science Motivation Project III. I wish I could send all the participants personal letters but the number who cooperated makes this impossible. I realize that the major interest in the Science Motivation Projects is on our part. Hence, your cooperation is doubly significant.

We will, of course, keep you informed of the results as they accrue and trust that if there is anything we can do to provide you with information we will be happy to do so.

Again, thanks.

Sincerely,

George G. Mallinson
Dean and Director
Science Motivation Projects

GGM/mf

OE 6000 (REV. 9-66)

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
OFFICE OF EDUCATION

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TITLE

CHARACTERISTICS OF NON-COLLEGE VOCATIONALLY-ORIENTED SCHOOL LEAVERS AND GRADUATES

Final Report

PERSONAL AUTHOR(S)

Mallinson, George G.

INSTITUTION (SOURCE) Western Mich. Univ., Kalamazoo, Mich., School of Graduate Studies

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RETRIEVAL TERMS

Vocational Education
Characteristics of Non-College Students
Technical Education
Non-College vs College Students
Vocational Guidance

IDENTIFIERS

ABSTRACT

It was the purpose of this study to survey a sampling of non-college bound students to determine what, if any, vocational training they had received following high school. Information concerning their socio-economic and academic backgrounds was investigated. A survey was made of the types of training they had received, their reactions to the training, and the jobs they had held.

Two primary methods were employed: (1) a reanalysis of standardized test scores obtained in high school, and a comparison of the scores with those of a matched group of college-bound students; and (2) personal interviews by trained interviewers.

It was found that the non-college bound students generally came from homes where parents had lower occupational and educational levels than those of their college-bound peers. The subjects of the study had neutral reactions to high school in general, but had negative reactions to the high-school guidance program. They believed that counselors had little time for, or interest in, non-college bound students; further, counselors provided little vocational information.

Almost half of the subjects had received some type of vocational training after high school. Most were satisfied with the training, but expressed dissatisfaction with the placement services received. The most common types of training received by the males were apprenticeships or business school courses; for females, the most common types were nursing or beautician's training.